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ABSTRACT

A new field component for the teacher education program at Michigan State University includes the use of collaborating mentor teachers each of whom oversees an individual preservice teacher's field experiences for a two-year period. Instead of simply providing a classroom context for students' field visits, mentor teachers studied the Academic Learning Program goals and research base; collaborated with Academic Learning faculty in the design, evaluation, and revision of field assignments; and guided prospective teachers' work in the field. Thus, mentors played an active role in the teacher education process. This paper describes a study conducted in 1987 and 1988 involving 65 prospective teachers and their mentors and 12 case study students and their mentors selected from the larger group for more detailed data collection. The paper then discusses four issues concerning the collaborative relationship between faculty and mentor teachers centered around providing educative field experiences for prospective teachers: (1) the learning-to-mentor process; (2) the evolution of the mentor teacher role; (3) mentor teachers teaching faculty; and (4) the faculty role in the collaborative process. The study focuses on understanding students' developing knowledge and understanding of teaching for conceptual understanding of subject matter, and their ability to use their developing knowledge and skills to teach for conceptual change. (JD)

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Field Experiences that Teach: Mentor/Faculty Roles

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FIELD EXPERIENCES THAT TEACH: MENTOR/FACULTY ROLES

Overview

There is abundant discussion in the teacher education literature about the merits of providing more field experiences for prospective teachers, and about the contributions such experiences make to the learning-to-teach process. Recognizing a need to help teacher candidates go beyond comprehension of program concepts to developing the ability to use newly-learned conceptual tools to analyze, interpret, and inform their teaching practice, in 1985-7 the Academic Learning Program faculty designed a new field component for its two-year undergraduate teacher education program at Michigan State University. The field component is structured in unique ways, including the use of collaborating mentor teachers each of whom oversees an individual preservice teacher's field experiences for a two-year period. Students undertake field assignments each term under the joint supervision of the mentor teacher and the university instructors. This new field component was integrated into the two-year course sequence to provide occasions for prospective teachers to link knowledge gained from research and theory with knowledge gained from classroom experience beginning with their initial professional education preparation.

An important piece of the field component was a new role for classroom teachers. Instead of simply providing a classroom context for students' field visits, mentor teachers studied the Academic Learning Program goals and research base; collaborated with Academic Learning faculty in the design, evaluation, and revision of field assignments; and guided prospective teachers' work in the field. Thus, mentors played active roles in the teacher education process.

This paper discusses four issues concerning the collaborative relationship between faculty and mentor teachers centered around providing educative field experiences for prospective teachers: the learning-to-mentor process; the evolution of the mentor teacher role; mentor teachers teaching faculty; and the faculty role in the collaborative process. These findings emerge from a two-year study in which program faculty studied the learning-to-teach process of 65 elementary and secondary education majors, including the close study of twelve case study students across their two years in the program. The study focused on understanding students' developing knowledge and understanding of teaching for conceptual understanding of subject matter, and their ability to use their developing knowledge and skills to teach for conceptual change. Study of the faculty-mentor collaborative process in providing educative field experiences for these students across the two years was one aspect of this larger study.

The Need for Educative Field Experiences

As research on teaching provides increasing insights into effective ways to teach subject matter, teacher educators and policy makers continue to stress the need to help teacher candidates learn to draw on a professional knowledge base in their teaching. As "thoughtful professionals," it is hoped that novice teachers will be able to use what they learn in their professional studies to teach effectively in classrooms (e.g., Carnegie Commission, 1986; Holmes Group, 1986). There has been a history in teacher education of looking for ways to help teacher candidates translate formal theoretical knowledge and research knowledge encountered in professional studies into classroom practice (Borrowman, 1965).

One common way to help bring theory to practice is to call for field experiences where prospective teachers can try out newly learned theories and research knowledge in classroom settings (e.g., Beyer, 1984). Yet studies of the contributions of early field experiences yield disappointing conclusions. For example, for many students, student teaching is a time to discard goals and ideals learned in professional studies and take a utilitarian approach to doing what "works" in the "real world" (e.g., Fox et al., 1976; Iannoccone, 1963; Tabachnick, Popkewitz and Zeichner, 1979-80). Moreover, students' work with experienced teachers in an institutional setting socializes them into fulfilling expected requirements and learning to teach as they were taught themselves (Lortie, 1975; Lacey, 1977). An added danger to early field experiences is that students may develop the notion that their utilitarian and unexamined practices are successful, since they can successfully copy their classroom teacher (Feiman-Nemser & Buchmann, 1983; Wilson, 1975). Thus, many teacher educators caution that field experiences can become "miseducative" and end up teaching prospective teachers to teach in undesirable ways (Erdman, 1983; Feiman-Nemser & Buchmann, 1983; Zeichner, 1980).

Recent research has revealed that there is much to be learned from practicing teachers about effective ways to teach (Buchmann, 1983; Clandinin, 1986; Conelley & Clandinin, 1985; Phillips, 1980; Schon, 1983; Wilson, 1975). For example, "know-how" in carrying out teaching routines, personal commitments, common sense, and personal experience as learners are all particular kinds of "knowing" that can legitimately inform teaching practice. Thus, a professional knowledge base for teaching requires the integration of theoretical and research knowledge with knowledge gained from practical experience. Helping teacher candidates develop a complex system of knowledge,

ideas, beliefs stemming from many different sources is a different undertaking than following the more simplistic model of translating research findings into practice (Zeuli & Buchmann, 1988).

Accordingly, a new vision of field experience is required. This is a vision of tasks, reflection, and key relationships that facilitate a coherent integration of multiple sources of knowledge and allows students to make personal sense of concepts, theories, research and beliefs, instead of forcing students to make choices as to which set of knowledge, ideas and beliefs will guide their teaching decisions. Field experiences that educate are those that facilitate conceptual change (Posner et al., 1982) in prospective teachers. This gradual process, slowly developing over time, centers around three kinds of reflective activity: (a) bringing out prospective teachers' current ideas, understandings and beliefs (preconceptions) for close examination; (b) challenging the validity and conceptual coherence of these preconceptions in an environment that fosters careful analysis and ongoing deliberation; and (c) helping teacher candidates construct a conceptually coherent understanding of the teaching and learning process, drawing on multiple sources of knowledge. Thus, through educative field experiences, prospective teachers do more than survive or get by; they strive to develop a conceptually coherent view of teaching and learning that can serve as a framework for thinking and guide their teaching action.

Three key participants in this new vision of the field experience are the teacher candidate, faculty who work with students in their professional coursework and fieldwork, and classroom teachers whose classrooms serve as a learning context for students. Therefore, the interaction among and between these three participants is extremely important to fostering conceptual change

in students. Faculty and mentor teachers must collaborate and coordinate their efforts to avoid setting up an either/or choice where the knowledge from professional studies and classroom experience are viewed as mutually exclusive alternatives. Insights about the role requirements of faculty and mentor teachers, the nature of collaboration between faculty and mentors, the kinds of knowledge needed to carry out respective roles, and what faculty and mentors learn through the collaborative process can inform teacher educators about ways to structure educative field experiences.

Methodology and Data Source

Sample. In 1987 and 1988 program faculty studied 65 prospective teachers' developing understandings of program themes, with particular attention paid to explaining how these understandings developed over time, and identifying the sources of influence on changes that developed. Each student worked with a mentor teacher across the two years, so 65 mentor teachers were also included in the sample. Of this larger group, 12 case study students were chosen for more detailed data collection (7 secondary majors across the four subject areas; 5 elementary majors with different strengths and interests across the subject areas). These students' mentor teachers were included in the more detailed data collection as well.

Methodology. For the 40 secondary education majors (in English, mathematics, science and social studies) and 25 elementary education majors, questionnaires were given at strategic times across the two years. Samples of student teaching unit plans, reflective essays, and notes from student teacher supervisors' observations were also collected.

Data collected for the 12 case study students included six in-depth interviews conducted upon entry to the program, and at the end of each term

thereafter. Each case study student was observed eight times during student teaching, and the observer took detailed field notes of instruction and post-instructional and planning conferences. Course instructors and student teaching supervisors were interviewed at the end of each term. Samples of students' writing (journals, papers, field assignments, student teaching unit and lesson plans, reflective essays) supplemented interview and observation data. Thus, the data set provided information about students' own views of the learning process and their developing understanding, as well as information about their ability to act on their knowledge.

Extensive data were collected on mentor teachers as well. All 65 mentor teachers were given questionnaires at regular intervals across the two years. In addition, the twelve mentors who worked with the case study students were interviewed in depth 5 times. Questions posed in the interviews were designed to elicit information about mentors' reasons for participating in the program, their views of their role, their understanding of the case study students' learning needs, their knowledge and understanding of program goals, and reactions to the learning-to-mentor process. To supplement this information, extensive notes were taken at each mentor teacher workshop, noting topics discussed, concerns raised, and changes in the mentoring process over time.

Analysis of the student interview transcripts focused on tracing students' developing understandings of program themes over time, and looking for sources of influence on students' development. In concert, mentor teacher interview transcripts were coded and analyzed using the following initial categories: (a) the mentor teacher role; (b) knowledge and understanding of program themes; (c) knowledge and understanding of student; (d) perceptions of mentor teacher workshops and meetings. Particular attention was paid to ways in which mentor

teachers' knowledge, vision of the mentoring role, and understanding of the learning-to-teach process influenced the amount, nature, and substance of the interaction with their respective case study student. In addition, mentor teachers' developing knowledge and skills for taking on a teacher education role were analyzed. Finally, mentor teacher workshop notes were analyzed for ways in which the mentor-faculty collaborative process changed over time.

Learning to Mentor and the Mentor Teacher/Faculty Collaborative Process: Four Issues

An important goal of the mentor teacher field component was to involve classroom teachers in a more active, central teacher education role. Originally we had a single vision of this role: Mentors would learn from program faculty about the themes and goals of the Academic Learning Program, and they would then actively support prospective teachers in making links between their study in Academic Learning classes and their learning from experience in classrooms. However, our articulation of the mentor teacher role evolved as we learned about: the realities of mentoring within the time constraints mentors faced, the difficulties of playing both a teacher education role and a teacher role simultaneously, the slowly evolving nature of the learning-to-mentor process, and the variety of ways in which mentors could make positive contributions both to Academic Learning faculty and to Academic Learning students. Over time we developed a new vision of our partnership with mentors, creating a layered view that included a variety of productive mentor roles.

As our views of the mentor roles changed over time from a single focus to a more layered perspective and as we learned more about the knowledge necessary to mentor effectively in fulfilling different mentor roles, our ways of working

with mentors also changed. Learning how to teach mentors at the same time that we are collaborating and learning from them has been an important focus of our work. We have learned a great deal about the conditions necessary for such an educative, substantive collaboration.

We turn now to explore four issues concerning the faculty/mentor collaborative process, and trace ways in which that collaboration changed over time. The four issues are: The learning-to-mentor process, the evolution of a layered view of mentor roles, mentors teaching faculty, and changes in the faculty role.

The Learning-to-Mentor Process

The challenges of learning-to-mentor. Why did we change our view of mentor teacher roles? A partial answer to this question is that we learned how difficult it was for mentors to develop the rich set of knowledge, skills, and dispositions needed to carry out effectively our original vision of the mentor teacher role. Developing the knowledge needed to guide prospective teachers' understandings of theory and research in classroom settings, especially given the limited time teachers had to focus on learning to mentor, was a gradual process. For example, it took a long time for many mentors to begin to shift from a teacher perspective to a teacher educator perspective and to think about their Academic Learning students as learners. Learning how to shift back and forth between their teacher role and their teacher education role also took time.

Ways in which these mentors worked differently with their Class of '88 student compared with their Class of '87 students show how mentors came over time to develop a richer view of prospective teachers as learners and how mentors' knowledge of program goals and themes evolved slowly. For example, in

their interviews most of the case study mentors talked about how their attention with the first student was largely focused on procedural issues having to do with the field assignments. They did what they could to help students complete the assignments one by one as a series of isolated tasks. It was only in working through the assignments with a different student in the second year that they were able to notice and understand ways in which assignments were designed to emphasize program themes gradually and systematically.

> Well, in the beginning they (the meetings) were explanatory. I didn't really have a gist of what was going to be happening, and so it needed to be an introduction to that kind of interaction between mentor/student and campus. I really think that first half year or at least the first year, I still didn't quite understand what my function was other than being in a classroom where the student could come. But into the second year they, the meetings really were a guiding light. They were a focus so that I could look a little better at what the assignments were and what the students were doing. But again I had a whole year of working with the student, so I suppose I was looking at the student a little differently and not just my function as the teacher of a classroom full of children, but rather as someone who could help and guide them, show them. That probably didn't come to a head until even the third year and then I felt that that was my function, as a model - even though that was told to us in the beginning, I just didn't feel that until I worked with one student all the way through. (Mentor interview, 4/6/88)

In addition to the time needed to learn to mentor, mentors need to develop the knowledge, skills, and disposition for effective mentoring. While both mentors and faculty recognized this need, they had different perspectives about what knowledge and skills mentors needed to develop.

Mentors' views about the knowledge needed to learn-to-mentor. Especially at the beginning, mentors wanted knowledge about logistical and procedural issues related to carrying out their responsibilities so students could complete the field assignments. In mentor meetings, they brought up many questions related to scheduling: whether the students' schedules fit their teaching day (e.g., to focus on a particular subject area lesson, or to have

time to talk before or afterward); whether mentors would receive the papers written in conjunction with field tasks from the students at the appropriate time; whether mentors should call to schedule the student's classroom visit if the student had not called them. Other practical difficulties arose with each classroom visit and written assignment: a mentor does not use a text with kindergartners so what textbook should the student use for the textbook analysis assignment? Who will pay for copying of textbook pages for students to use in their text analysis? Are the students required to give the mentor a copy of the paper?

As workshops have progressed, a recurrent topic in mentor teacher feedback is the identification of specific kinds of information they think would be helpful in learning to mentor. For example, some teachers ask for course readings so they will understand more about concepts students study (e.g., What do you mean by "approaches to teaching," "content representation," "the structure and function of knowledge," or "student development? ") Others want to know more about how to work with the students. For example, they wonder if they should provide written feedback on papers students write for the course and share with them, or whether it is better to conference with the student before or after the field visit. Others want to know more about ways to help with specific field tasks. For instance, they wonder what kind of text is best for the analysis and critique assignment, what type of student they should have the prospective teacher observe to analyze student learning, or what type of lesson they should have the student observe to analyze the intended curriculum.

From this ongoing feedback from mentors, program faculty continually learned more about which aspects of a knowledge base for becoming a teacher educator needed to be developed in mentors. They also got ideas about

strategies for developing the knowledge base to which mentor teachers are responsive.

Faculty views about the knowledge needed to learn to mentor. Program faculty began the Mentor Teacher Project with the assumption that mentor teachers need to develop knowledge and skills that would enable them to support students in linking research-based theory to classroom practice. An important goal was to help mentor teachers shift from focusing solely on the teaching of children to take on the additional commitment of becoming teacher educators for novices. Consequently, faculty saw the need to balance the tension between immediate concerns for particular field experiences (helping mentors know what to expect, the assignment's focus, and ways to be immediately helpful) with long-range goals of helping the mentors develop knowledge and accompanying skills to be supportive of program goals.

One major area of concern to program faculty is the extent to which mentor teachers learn to be effective teacher educators. This includes understanding what the potential of their role is, as well as having the disposition to take on that role and learn to do it well. Many of these experienced teachers had worked with student teachers in the past and already held notions about what a classroom teacher can do to help a novice learn to teach. Program faculty often had a vision of that role that conflicted with or went beyond what mentors envisioned. For example, faculty saw learning-to-mentor as working toward multiple goals: (a) supporting students' developing understanding of course concepts as they are exemplified in the classroom context; (b) showing students how theory provides a framework for thinking about practice; (c) working with Academic Learning students' current understandings and beliefs and trying to build new knowledge and understanding out of prior knowledge;

(d) helping students see the relationship between specific course concepts and how they fit into the overall context of teaching, or the "big picture"; (e) developing a mutually beneficial professional relationship that supports student learning through dialogue and worthwhile experiences while still meeting the mentor teachers' obligations to their children's learning needs; (f) identifying areas that are not or cannot be addressed in teacher education courses in which the mentor can help the prospective teacher develop understandings (e.g., knowledge about particular curricula, about particular students, about school routines and policies, etc.)

Another faculty concern is developing mentor teachers' knowledge of program themes and concepts. This issue was a frequent topic of discussion in faculty planning meetings and in debriefing sessions after mentor workshops. Faculty view mentors' knowledge in this area as essential if they are going to help Academic Learning students learn from their field assignments. It is easy enough to identify which concepts are important to a particular field experience, and to identify terminology that might not be familiar to mentor teachers. However, faculty had to be very selective about how to spend the precious hour or so they had with mentors in a workshop devoted to one particular field assignment. Not only did they need to help mentors understand the concepts (e.g., What is "knowledge representation?"), but they also needed to address the procedural issues associated with smoothly-run field visits (e.g., What kind of lesson would best suit this inquiry, and does it fit with the teachers' and students' schedules?).

Another area of knowledge that faculty identified as important in helping mentors become teacher educators is knowledge of the prospective teachers' development. For example, what do Academic Learning students understand about

the classroom context, course concepts, working with a professional as a learning process? What kinds of conversations about an experienced teachers' work help a student understand theories of learning, theories of teaching, or the structure and function of curriculum? What difficulties will the students have with their role as novices in someone else's classroom? Again, these areas needed to be addressed within the time constraints of the workshops.

How to support mentor teacher learning. As the project progressed, program faculty listened to mentor teacher feedback to learn about their knowledge and skill levels in mentoring. They wanted to avoid assuming lack of knowledge if it did not in fact exist, to build on mentors' current understanding and beliefs, and to motivate mentors to identify areas needing work and to work at improving them. They carefully considered ways in which the knowledge teachers wanted was different from the knowledge that faculty thought they needed.

How to best support mentor teachers' substantive learning so they could better help students link their professional studies and practice was a recurring discussion among coordination faculty. Early efforts to present lots of theoretical and research information to teachers (in a format that resembled a lecture in a college course) quickly gave way to meetings that were primarily focused on procedures and details. However, as faculty understanding of the mentor teachers increased and as mentor knowledge of the particulars of field assignments increased, the nature of workshop topics evolved from an emphasis on procedural issues (e.g., "When is this assignment due?") to substantive ones (e.g., "What is a liberationist approach to teaching, and how does that reflect program themes?" "Why is it useful for students to analyze classroom teaching from these three perspectives?"). At the same time, the nature of workshop

interactions evolved from faculty talking to mentors and answering questions to debate among mentors about course-related or teacher education issues.

These shifts were largely due to a change in program faculty's strategies in working with mentors at the workshops. The faculty has not been able to solve the issue of not having enough time to work with the mentor teachers; they would still like more. However, they developed ways of making the most of time available. They learned how to communicate more clearly field assignment expectations on the assignment sheets, and to get the assignment sheets to mentors in a timely fashion. In this way the mentors had more time to digest the expectations and to work on solving logistical problems themselves. In addition, the faculty sent key course readings to mentor teachers prior to workshops and focused discussions on how the readings illustrate concepts that would be explored in the field visits. Handouts such as examples of concept maps were used to initiate discussions about how knowledge is structured in particular disciplines, and how that structure is reflected in school curricula. Videotapes of teachers in classrooms were used to illustrate concepts (such as knowledge representation), or to illustrate ways to conference with students about a lesson. Sample student unit plans were used as a specific instance of program themes and as a springboard for discussion about ways to talk to students about their unit and daily lesson plans ("What questions might you ask this student about her understanding of the subject matter?" "How might you help this student see that some of her planned activities are more clearly linked to her objectives than others?").

Faculty also reorganized the social organization of mentor meetings. Mentors were divided into smaller discussion groups (secondary math teachers, secondary English teachers, secondary social science teachers, secondary

science teachers, and two groups of elementary teachers) to encourage full participation and a spirit of exploration. Instead of having teaching faculty (which varied from term to term) lead the workshops, each coordination faculty member took the lead role with a particular small group of mentors on a regular, ongoing basis. This consistency in group leadership as well as membership fostered an increased sense of commitment to working together toward common goals. These shifts in strategies have proven helpful in providing support to the mentors in their work with Academic Learning students.

As the program faculty's teaching of mentor teachers has taken on characteristics similar to their teaching of Academic Learning students, there has been significant progress in supporting mentor teachers' growth as teacher educators. Faculty now build on mentor teachers' prior knowledge and beliefs, encourage dialogue and debate when differing views surface. This encourages mentors to question their own assumptions and to discuss them with their colleagues. Faculty have learned to communicate more clearly to mentors the knowledge base needed to become effective teacher educators. They share insights about students to help mentor teachers view Academic Learning students as novices who begin the learning-to-teach process with prior knowledge and belief systems that need to be examined and built upon. Finally, they model and foster reflection about their own teaching (of students and of mentor teachers) to help mentors realize the benefits of ongoing reflection on their work with prospective teachers. The faculty are still working at improvements in each of these areas, but there has been significant growth in mentors' knowledge, skill, and commitment over time.

An evolving, layered view of mentor roles

Learning-to-mentor in the ways faculty had envisioned was a much more gradual process than anticipated, but in the process mentors and faculty

explored and redefined mentor roles. The project began with one vision of what it means to take on a teacher education role, and that vision reflected how university faculty work with prospective teachers. Essentially, mentor teachers would be taught to be like university teacher educators. Despite rhetoric in the project proposal about the important and unique contributions that classroom teachers could make in helping prospective teachers learn about practice, it was difficult to recognize such contributions at first. Faculty lamented that mentors were not actively helping students link program themes with classroom practice because they were not accomplishing these goals in the ways faculty had envisioned. Over time, largely as a result of our study of case study students and their mentors, the variety of ways in which mentor teachers could make important contributions and support Academic Learning students in understanding program goals were recognized. The mentor teachers took on a variety of teacher education roles that provided different levels of support in helping students link study and practice. Thus, a single vision of mentor teachers as teacher educators gave way to a richer, layered view.

The mentor teachers' work with the case study students illustrates the different roles mentors played and the ways in which each of these roles accomplished at different levels the goal of supporting students in linking their study of program goals and their learning from experience in the field. Consider four mentor teachers' ways of supporting students in using ideas about conceptual change, concept mapping, and students' misconceptions in science to analyze lessons taught by the mentor (in the curriculum course) and to plan and teach a science unit (during the science methods course).

Layer One: Providing information and opportunities. Mentor A, an elementary teacher, had never heard of conceptual change ideas before working

with the Academic Learning Program, and she generally did not even teach science (teaming with another teacher to cover social studies and science instruction). Without knowing very much about how to analyze the science curriculum from a conceptual change perspective, Mentor A still played a valuable role in helping her student, Marian, develop deeper understandings of conceptual change science teaching. She did this by responding thoughtfully to Marian's questions, by asking clarification questions, and by allowing Marian to try approaches that were different from her own.

Mentor A opened up her classroom to Marian for analysis and responded to Marian's questions. These questions, which were often suggested in the directions for the field assignments, elicited Mentor A's ideas about teaching science and her insights into children's thinking. In planning a science unit about electricity, for example, Marian turned to her mentor for ideas about possible student misconceptions and for her mentor's assessment of how students might respond to the planned activities. Thus, Mentor A provided Marian with information about students' prior knowledge that would enable her to use a conceptual change model more effectively in planning her science unit.

Some of the information that Mentor A provided about science teaching and learning was not directly applicable to the unit planning process. But this information was useful to Marian in analyzing ways in which conceptual change ideas are or are not integrated into her mentor's planning and teaching. Again, this played an educative role for Marian, stimulating her to compare the ideals taught in her courses with the realities in her mentor's room. In her post-student teaching interview, Marian described how throughout her two years in the program she had continually reassessed the extent to which her mentor was a "conceptual change teacher." During the science unit teaching

experience, Marian had felt that her mentor was not a conceptual change teacher. Later, as she came to know more about her mentor's approaches to teaching in other subject areas, she was able to identify a number of ways in which her mentor's teaching was consistent with some important aspects of conceptual change teaching.

Mentor A also played an important teacher education role by asking clarification questions. For example, she was truly puzzled by concept mapping and asked questions like, "What do you mean by a concept map?" "Why are you doing this?". These questions challenged Marian to explain her thinking and to check her own understanding of the purposes of this assignment.

Finally, Mentor A supported Marian in making links between research and practice by allowing Marian to try new approaches. She gave Marian suggestions about possible pitfalls and management issues to consider in trying new approaches, but she did not discourage or in any way undermine Marian's efforts to try something different. For example, Marian wanted to involve students in small group work, a break from the mentor's focus on whole-group instruction. Mentor A was receptive to this idea, helped Marian think about potential problems, and encouraged Marian to try it again even when the first attempt had some rough spots.

Layer 2: Teaching about practice. Teachers at the first level were primarily responsive to students, reacting to students' assignments and questions. Some mentors went beyond this reactive role and identified key aspects of practice that they wanted their students to learn about. Frequently, the area they selected was classroom management and student discipline.

Mentor B, who taught in an inner city elementary school, believed that her Academic Learning student needed to be very knowledgeable about classroom management and discipline routines if she was to succeed with this group of disadvantaged second graders who were crowded into a small, semi-open classroom. Because her student, Kristin, visited the classroom regularly (beyond the times required for specific field assignments), Mentor B had the opportunity to teach Kristin about approaches to management. She talked to Kristin about strategies she had found to be effective, she explained why she had taken certain actions during class, and she allowed Kristin to try out some of these strategies in small chunks (handling the opening routine, walking the class to the gym, etc.). Kristin appreciated this guidance and felt it contributed in important ways to her initial success in teaching the science unit and her later success during student teaching. As Kristin explained, maintaining control and cooperation of the students was essential if she was going to be able to teach for conceptual understanding.

There were times that Mentor B's teaching about practice conflicted with what Kristin was learning in her courses. For example, Kristin's mentor did not believe that this group of second graders could work productively in small groups. The students were too immature to cooperate, and they would get too noisy and unruly. In Academic Learning courses, however, Kristin was hearing that children need opportunities to talk about their developing ideas and that "cooperative learning" in small groups is a particularly effective teaching strategy. Such conflicts often were particularly educative for Kristin. In her teacher education class, she shared her mentor's perspective with faculty and classmates and reconsidered the notion of cooperative learning in light of the reality at City Elementary School. She also probed her mentors' thinking

and reasoning further and wrote about the conflict in her journal. In struggling to resolve the conflict, she learned about the complexities of intertwining knowledge gained from research with knowledge of practice. She was convinced that these students would benefit from talking more, but she also saw how disruptive it might be in this open classroom setting if her students got too noisy. During student teaching, she generally demurred to the practical issues and taught the group as a whole, but she also found ways to include activities in which students were talking together.

Layer 3: Learning together. Like Mentor A, Mentor C responded to her student's questions and provided a supportive setting for Barbara to try new approaches. Like Mentor B, she taught Barbara about aspects of practice that went beyond the boundaries of the "official" field assignments. For example, she emphasized the importance of looking at each child from social and emotional as well as academic perspectives and shared insights about her students' personalities, home life, interests, and academic abilities. This emphasis played an important role in Barbara's ongoing reflection about conceptual change frameworks for thinking about teaching: Barbara worried about the balance between treating children as "minds" and treating them as people.

But Mentor C added another layer to her work with Barbara; she eagerly learned about conceptual change ideas along with Barbara. Mentor C was a Kindergarten teacher who was very active in promoting and supporting science teaching in her suburban district. Despite her interest and knowledge about science teaching, Mentor C was not familiar with the conceptual change research base. However, she was eager to learn about it. As she and Barbara worked on field assignments and unit plans together, Mentor C found conceptual change

ideas to be compatible with her own thinking about science teaching. She quickly saw the value of the concept mapping tool. While most of the faculty had not really considered how to adapt this teaching perspective for kindergartners, Mentor C had no trouble making this connection. She and Barbara often seemed to be working as colleagues -- inquiring, planning, and reflecting together. Thus, Mentor C took an active role in helping Barbara make connections between conceptual change theory and teaching kindergartners about science.

Layer 4: Teaching about conceptual change. Mentor D was a middle school science teacher who had previously learned about conceptual change perspectives through his participation in a research project directed by three Academic Learning faculty members. In this project, he had had the opportunity to teach two units using curriculum materials that were built around a conceptual change model of instruction. Mentor D had found this approach to teaching to be compatible with his own emphasis on conceptual development but learned to enrich that perspective with more careful analysis of students' thinking. Thus, when conceptual change ideas were discussed in mentor/faculty meetings Mentor D was revisiting and deepening his understandings of these ideas rather than encountering them for the first time.

Because Mentor D had this knowledge and valued it, he could take a proactive role in helping his student, Dave, develop his understandings of program themes in the context of a seventh grade life science class. Mentor D did not always successfully model conceptual change teaching. However, he knew when he was not teaching for conceptual change, and he could articulate for Dave his reasons and dilemmas. In a lesson Dave observed about nutrients, for example, Mentor D basically went through each nutrient and its function,

telling students about each one in a didactic fashion. He explained to Dave that this was one of those pieces of the curriculum that he just did not know how to think about in terms of student misconceptions and conceptual development. It just seemed like information that students need to be told and to memorize. Thus, Mentor D took an active role in helping Dave struggle with the day-to-day issues he would face in using a conceptual change teaching model. He had the knowledge of the research base of the program to really challenge his student's thinking.

Layer 5: Modeling conceptual change teaching. Some mentors modeled important aspects of conceptual change teaching. Dave's mentor, for example, modeled a focus on the development of understandings of a few central concepts rather than broad coverage of long lists of facts and vocabulary. In teaching certain units, he was particularly knowledgeable about students' misconceptions and taught in a way that was responsive to these student conceptions. Karen, a secondary English major, often viewed her mentor as modeling approaches studied in Academic Learning courses. This modeling by her mentor played an important role for Karen, convincing her that the ideals taught in her teacher education courses could be translated into action in real classrooms and that such teaching was important in terms of student outcomes.

However, mentors did not consistently model a reflective, conceptual change stance toward teaching. Our analysis of the various mentor roles and their impact on students shows that such active modeling of conceptual change teaching is helpful to prospective teachers, but it is not the only way to help students deepen their understandings of conceptual change perspective. Each of the layers of support can play an educative role in helping students link conceptual change research and classroom practice.

Certainly, we would like to have mentors develop multiple layers into their mentoring. While Mentor A's minimal level of support proved sufficient to help Marian develop meaningful links between research and practice, not all students can succeed with this minimal level of support. Dana, for example, had a mentor who was very responsive to her requests for information. Like Mentor C, he knew little about conceptually-focused teaching but was eager to learn about it. In his case, however, he taught mathematics in more procedurally-focused ways that did not model a conceptual change perspective. Dana's view of mathematics and math teaching was firmly entrenched in such an "executive," rule-based framework, and her mentor's level of support was insufficient to help Dana change this view. She needed someone operating at level 4 or 5 to challenge her to change her conception of good mathematics teaching.

Thus, there are a variety of layers of productive mentor roles. Each layer contributes to the teacher education process, fostering in different ways prospective teachers' attempts to integrate their studies of research and theory with their classroom-based understandings. Prospective teachers differ in the level of support they need to undergo their own conceptual change about teaching and learning.

Mentors teaching faculty

Because an important goal of the Mentor Teacher Project was to help mentors understand program goals and the conceptual change research base, most of our discussion of the mentor/faculty collaboration has focused on ways in which faculty attempted to teach mentors. An equally important part of this collaboration, however, is the ways in which faculty have learned from mentors.

In addition to their direct work with Academic Learning students in the field, mentors also contributed to the teacher education process by teaching

Academic Learning faculty about their curriculum, about the difficulties they saw in enacting program goals in classroom teaching, and about the Academic Learning students' strengths and weaknesses in the field. Thus, mentors made critical contributions to the collaborative process by helping to shape the program courses and field assignments in ways that helped prospective teachers understand conceptual change ideals as feasible to pursue in real classrooms.

One example of this grew out of mentors' concern that classroom management issues were not being dealt with effectively in program courses and field assignments. The mentors' persistence in this area forced faculty to rethink the ways in which classroom management was addressed in the program.

Initially the faculty did not address management issues extensively, believing that careful planning of meaningful student tasks would go a long way toward preventing disruptions and assuring smoothly-run lessons. In response to mentors' concerns about students' failures to attend to important management details in planning, however, faculty devised ways of integrating management issues into their courses within the framework of conceptual change teaching. Thus, management was not treated generically in a separate course, as many mentors advocated. Rather, Academic Learning students were forced to grapple with these issues repeatedly within the context of unit planning and teaching in the various methods classes and within a framework of the conditions needed for effective conceptual change teaching. Elementary majors studied management issues in three different methods classes.

Management issues were also woven into field assignments in much more systematic ways. After piloting of the field sequence, several changes and additions were made in the field assignments to address management concerns. For example, elementary majors in the Class of '88 had a new field assignment

at the beginning of their second year. In this assignment, the prospective teachers observed their mentors' classrooms for the first three days of the school year, analyzing the establishment of management routines. Students analyzed and wrote about the details of these routines. Later, in the context of the interdisciplinary curriculum course, they discussed these strategies in relationship to research articles they were reading about classroom management issues. The students reported on end-of-student-teaching questionnaires that this field assignment was one of the most important field experiences. In this revised field experience sequence, secondary majors were helped in two ways to consider classroom management issues in their initial unit planning and teaching assignment. First, the methods course instructors addressed management issues in course readings and discussions. Secondly, students visited the mentor's classroom once a week (1/2 day) throughout the Spring term. During these visits, mentors took the lead in providing experiences that would help students develop deeper understandings of program themes and classroom management issues. Prior to teaching their units, Academic Learning students were required to go over their daily plans with their mentor, with an eye toward identifying potential management problems. Thus, students were supported not only in developing conceptually-focused units but also in attending to the details that would enable them to keep the lesson focused on conceptual issues.

Regular interactions with mentors also forced Academic Learning faculty to tie their thinking about conceptual change ideas to actual school curricula. In the past, Academic Learning students got the message that they needed to abandon the typical school curriculum and practically construct a new one from scratch in order to teach for conceptual change. This contributed to students'

perceptions that conceptual change teaching was too idealistic for use on a regular basis in classrooms; they recognized they did not have the time or ability to build singlehandedly a new school curriculum. Working with mentors and the particular curricula in their classrooms pushed faculty to think about conceptual change ideals in new ways. They began to develop ideas about how to help students adapt existing curricula in meaningful ways. As the faculty themselves struggled with the unit plans students were developing, they were forced to translate their ideals into specific cases. Thus, students saw faculty modeling ways to rethink existing curricula, to use the curricula as a base, and to frame the curricula in ways that would be more supportive of students' conceptual understanding. This process played a critical role in enabling the prospective teachers (and their mentors) to see conceptual change teaching as possible and realistic for classroom use.

Mentors also provided faculty with important insights into Academic Learning students' development. They had the opportunity early on to observe the Academic Learning students interacting with children and trying to implement concepts and teaching strategies learned in courses. Mentor feedback to faculty about Academic Learning students' work in the classroom provided information that helped faculty to refine field and course assignments, to define more clearly expectations for student work in the field, and to identify students whose difficulties required special attention. As a result, students were more closely supervised during student teaching, there were more instances of students who were given special experiences prior to beginning student teaching, and there were more students who had to delay beginning student teaching or to continue student teaching beyond the usual 11 weeks.

Changes in the Faculty Role

The dual level of planning. The Academic Learning Program's field experiences require of faculty two levels of planning. One level is developing the intended curriculum for Academic Learning students in the foundations and methods courses. This includes developing field experiences that appropriately highlight course concepts and provide ways for prospective teachers to understand them as they occur in classroom practice. A second level is developing the intended curriculum for mentor teachers so that they understand the purpose of field assignments, have the knowledge and skill needed to support students' learning, and have the disposition to take on a mentoring role as the faculty has defined it.

This study has shown the complexity of contending with these two levels of planning, and several problems associated with it. At the course level, teaching faculty address problems associated with teaching prospective teachers knowledge, strategies, and habits of reflection that will enable them to teach pupils to understand subject matter knowledge in meaningful ways. In addition to solving practical problems (e.g., time and scheduling constraints), faculty help students learn to work with an experienced professional and to use field visits to understand how course concepts are embodied in classroom life. They also help Academic Learning students shift their perspective from that of a student to that of a teacher, and learn how to benefit from concurrent study of theoretical frameworks for thinking about teaching and study of classroom practice. Faculty aspire to help students go beyond the immediate benefits of their experiences in the field and to learn how to learn from their own classroom experience in the future. Thus, planning the intended curriculum for professional studies of this nature requires careful attention to the lifelong

learning process as well as to the particular concepts and strategies being taught in the courses.

At the mentor teacher workshop level, coordination faculty address several areas in their planning. One area is making sure mentor teachers understand the field experiences in ways that enable them to support Academic Learning students' learning. This includes helping mentor teachers understand procedural details and how to work them out. In addition, faculty help mentors understand the concepts that are central to each field experience, and figure out how to help Academic Learning students analyze the concepts and understand how they apply to a classroom setting. Faculty provide experiences for mentors to learn about prospective teachers as learners and to develop ways to analyze their own teaching, so they can communicate to students what they do in their classrooms and their reasons for approaching their teaching in the ways they do. Faculty communicate closely with the mentor teachers through workshop interactions to learn about them as learners, and to figure out what their future learning needs are.

This dual level of planning has been successful because of the overlap of faculty across the levels of planning, and because of this group of faculty's broad commitment to program goals that go beyond an immediate commitment to one particular course. The faculty work actively at building on students' learning from one term's field experiences to another. For example, in the team planning session in the curriculum course (TE 205C), the faculty view their starting point as picking up where faculty in the learning course (TE 200C) left off. The TE 205C faculty select key readings from the previous course to review with their students, refer to what was learned from TE 200C field experiences to prepare students for their current visits, and use what they

know about their students' understandings of TE 200C concepts as a starting point for developing their own plans. Likewise, TE 200C faculty planning efforts and course content include ways in which students can become acquainted with their mentor teachers and their classrooms that will serve as a foundation for all their subsequent field experiences and not just for their experiences in TE 200C. The faculty teams for both courses are committed to getting the students off to a good start in the program, not just in their course. The overlap of faculty across the two planning groups (course planning and workshop planning) enhances the group's commitment and facilitates close communication across the two efforts.

Teaching by remote control. Teaching students through the field experiences as they are structured involves teaching in an indirect way. Faculty rely on mentor teachers' commitment, knowledge, and skill to help students learn from field visits, and therefore only indirectly teach, or teach by "remote control."

This study has shown that indirect teaching through field experiences has its own set of issues. One issue faculty contend with (discussed in the previous section) is addressing the dual level of planning, which requires regular, coordinated efforts across a group of faculty. Efforts of this nature require the kinds of commitment shown by the Academic Learning faculty to teaching their courses as part of a set of courses, not as individual entities. This includes helping students develop a relationship with mentor teachers that will last longer than the duration of their course. In addition, faculty need to create opportunities for students to tie or build on learning from one course to another, instead of focusing solely on creating experiences specific to the needs of their course.

Second, teaching students to make linkages indirectly (throughout their classroom experiences) is rewarding if it works well, but frustrating when it does not. Faculty have control over some of the aspects of making the experiences work, such as design of the field experiences and follow-up written assignments, design of the workshops to prepare mentor teachers for the experiences, and contact with students during class time to reflect on the experiences. However, there are several areas over which they do not have direct control: (a) the nature of the school curriculum; (b) the extent to which the mentors' practice provides an opportunity for students to understand program themes; (c) the mentor's level of commitment to take on and become better at the mentor teacher role; (d) the extent to which mentors use field time to work on their own goals for the student instead of program goals. It sometimes takes imagination, adaptation, and additional support to help prospective teachers analyze very procedurally-focused lessons (such as spelling or grammar lessons) from a conceptual change perspective. It would be much easier for students if their early observations could focus on conceptually rich lessons.

As faculty work with mentor teachers over time, they get ideas as to how to cope with these issues of control. For example, faculty design course assignments so they focus more closely on analyzing and understanding existing curriculum, so the link between theory and practice is more explicit. Students learn about the ideal through study of research-based theories, but then use the theories to examine existing curriculum to understand how it actually shapes student understanding in classroom settings. The opportunity to study aspects of existing curriculum such as the relationship among the intended,

enacted and actual curriculum allows students to situate the ideal in a real context.

In addition, faculty work actively with mentor teachers to foster a high level of commitment to understanding and taking on a mentoring role. They provide examples of the kinds of analysis students will be doing for particular field assignments so that mentors can arrange for students to observe lessons that more closely meet their needs for the assignment. The faculty also provide occasions for mentor teachers to confront them and each other with competing views of how field time should best be spent, so that the faculty and mentors can see each others' points of view. While faculty work at getting mentor teachers to at least understand program themes so they can help prospective teachers understand them, they also listen to mentors' ideas about other areas program experiences should address. They respond to those suggestions by considering places in the program's coursework where issues that mentors raise can be addressed during field visits as well. They not only respond to the mentors' suggestions for topics on which to focus, but also respond to the mentors' desire to leave the design of the experiences to the faculty. Mentors feel more comfortable (in terms of knowledge and time spent) playing an implementation role in the field experiences rather than a design role. Faculty plan to design further field experiences (which mentor teachers will help implement) that address areas mutually agreed upon as needing attention. Thus, while faculty do teach by remote control in one sense, the key to preventing frustration seems to be regular, open communication with mentor teachers and students about how the field experiences shape student learning. Again, closely coordinated efforts help make the field experiences a success.

Creating and Supporting Educative Field Experiences: Mentor Teacher/Faculty Collaboration

The goal of the Mentor Teacher Project was for teacher education program faculty and classroom mentor teachers to work together in supporting prospective teachers' efforts to link their study of research and theory with knowledge gained from practical experience in the classroom. Mentor teachers would become knowledgeable about program goals and the conceptual change research base and would use this knowledge to guide their interactions with prospective teachers in the field. Thus, the collaboration of faculty and mentors would focus on the substance of the Academic Learning courses, so that mentors and faculty would share the same agenda in working with prospective teachers.

As the project progressed, however, the difficulties in achieving this goal became apparent. Initial efforts to "turn mentors on" to the conceptual framework of the program were met by mentors with a seeming lack of enthusiasm and with requests for more procedural information. Faculty responded by considering changes in the goals of the project. Why not let mentors operate on their own agenda and let faculty operate on theirs? Maybe the best that can be expected is for mentors to provide a supportive, flexible environment in which the prospective teachers can work.

While such compromises were frequently discussed, the coordination faculty (mentor teacher group leaders) persisted in structuring meetings in ways that would help mentors learn more about the program as well as about procedural issues. Over time this persistence enabled some mentors to take on a variety of educative roles in guiding students' experiences in the field. These mentors came very close to matching the original goal, closely guiding their

students' efforts to link the concepts studied in courses with experiences in the field.

These successes have important implications for teacher education. Classroom teachers can take on meaningful and substantive roles in creating and supporting educative field experiences for prospective teachers. However, classroom teachers need support in developing their knowledge, skills, and dispositions as teacher educators. Learning to mentor effectively in this program required teachers to delve into the substance of the program - to grapple with new ideas and teaching approaches and to confront ways in which their own teaching was compatible with conceptual change ideals. As teachers were faced with making such links, faculty also confronted the difficulties in implementing conceptual change ideals in classroom. This process enabled both mentors and faculty to be more effective in helping prospective teachers learn how to use a conceptual change framework for integrating their experiences in the classroom.

We have identified some important issues in the learning-to-mentor and in the faculty/teacher collaborative process. We have had some successes in changing the teacher's role in the teacher education process without changing the structure of teachers' workplaces. The collaborative process holds even more promise, however, if teachers' work as teacher educators could be formally acknowledged and built into their work structure. Their contributions and effectiveness would be enhanced if teachers had time built into their work schedules to meet with faculty, to study the research base of the teacher education program, and to work with prospective teachers. The mentor teachers frequently voiced their need for additional time with their students and with the faculty and their beliefs that time to fully carry out their role would

enhance their effectiveness. We hope this project will stimulate others to think creatively about ways in which classroom teachers and faculty can work together to create and support field experiences that will be truly educative and transforming.

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